

### **REMARKS**

In the Office Action of June 16, 2006,<sup>1</sup> claims 1-60 were rejected under 35 U.S.C. § 101 as directed to non-statutory subject matter; claims 1, 2, 4-24, 26-44, and 55-58 were rejected under 35 U.S.C. § 102(b) as anticipated by Feehery, W.F. et al., "A Differential-Based Approach to Dynamic Simulation and Optimization with High-Index Differential-Algebraic Equations" ("*Feehery*"). Claims 3 and 25 were rejected under 35 U.S.C. § 103(a) as unpatentable over *Feehery* in view of "3.1 Associating Objects in C++" ("*Objects in C++*"). In response to the remarks filed March 2, 2006, the Examiner withdrew the § 102(b) rejections of claims 45-52. In view of the foregoing amendments to the claims, Applicant addresses the rejections below.

By this Amendment, claims 1, 5, 10, 11, 12, 23, 27, 32-34, 43-45, 49, 53-55, 58 and 59 have been amended. Claims 1-60 are pending in the application.

### **Interview Summary**

Initially, Applicant would like to thank the Examiner for the courtesy extended during the telephone interview on Tuesday, September 12, 2006, between Examiner Sharon and James Stein. The amendments and remarks made herein are consistent with the discussion during the interview. Particularly, the Examiner agreed that claims 45-52 are allowable over the prior art and would be allowed if the § 101 rejections are overcome.

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<sup>1</sup> The Office Action contains a number of statements reflecting characterizations of the related art and the claims. Regardless of whether or not any such statement is identified herein, Applicants declines to automatically subscribe to any statement or characterization in the Office Action.

### Section 101 Rejection

Applicant traverses the § 101 rejection of claims 1-60 because these claims are statutory. According to the Federal Circuit, the inquiry of whether a claim is statutory focuses on “the essential characteristics of the subject matter, in particular, its practical utility.” *State Street Bank & Trust Co. v. Signature Fin. Group, Inc.*, 149 F.3d 1368, 1375, 47 USPQ2d (BNA) 1596, 1602 (Fed. Cir. 1998). If a claim includes recitations that produce “a concrete, tangible and useful result,” the claim is not abstract and has practical utility. *See id.* at 1373, 1600-01; *AT&T Corp. v. Excel Communications, Inc.*, 172 F.3d 1352, 1358 (Fed. Cir. 1999), 50 USPQ2d 1447, 1451-52. If the claim is not abstract and has practical utility, it is statutory under 35 U.S.C. § 101.

The Examiner alleged that Applicant’s claims do not “recite either a useful, tangible or a concrete result.” Office Action at p. 4. Although Applicant disputes this allegation, in the interest of further prosecution of this application, all of the independent claims (1, 23, 43-45, 49, 53-55, 58 and 59) have been amended to further recite, *inter alia*, “generating an output.” In combination with the various limitations previously recited, the claims, as amended, recite a useful, tangible, and concrete result. Support for the amendments to the claims can be found at least on pages 20-22 of the specification.

First, the claimed invention is useful. The specification explains that the claimed invention is useful for simulating systems, which allows analyzing and predicting the behavior and performance of the systems.<sup>2</sup> *See*, e.g., page 1. According to the recitations of independent claims 1, 23, 43-45, 49, 53-55, 58 and 59, the behavior and performance of a system can be analyzed, predicted, and provided as output. Advantageously, the behavioral characteristics of a

given system may be analyzed and approximated prior to physically building and implementing the system, facilitating system design. Additionally, the claimed invention facilitates the simulation of existing systems for purposes of debugging and design modification. Thus, the claimed invention provides useful, non-abstract results.

Moreover, the subject matter defined by Applicant's claims is tangible. The claims recite more than mere mathematical constructs. Applicant calls attention to the PTO's "Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility," which states:

The tangible requirement does not necessarily mean that a claim must either be tied to a particular machine or apparatus or must operate to change articles or materials to a different state or thing. However, the tangible requirement does require that the claim must recite more than a § 101 judicial exception, in that the process claim must set forth a practical application of that § 101 judicial exception to produce a real-world result. (Pages 21-22, internal citations omitted.)

In this case, the claims set forth the practical application of simulating systems, and providing system analysis and prediction as output. It is clear that this is useful in applications such as system modeling, design, debugging, visualization, displaying, and storing representations of system behavior. For at least these reasons, Applicant's claimed invention is tangible.

Additionally, Applicant's claims define subject matter that is concrete. The claimed invention produces an identifiable output, which may be visualized, displayed or stored. These results facilitate simulations of systems, which may allow system analysis and prediction. In addition, these results are "substantially repeatable." *See id.* at 22.

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<sup>2</sup> In referring to the specification above, Applicants does not intend to limit the scope of the claims to the exemplary embodiments shown in the drawings and described in the specification. Rather, Applicants expressly affirms the entitlement to have the claims interpreted broadly, to the maximum extent permitted by statute, regulation, and applicable case law.

Applicant again calls attention to the PTO's "Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility," which states (on pages 17-18):

While abstract ideas, natural phenomena, and laws of nature are not eligible for patenting, methods and products employing abstract ideas, natural phenomena, and laws of nature to perform a real-world function may well be (emphasis added). In evaluating whether a claim meets the requirements of section 101, the claim must be considered as a whole to determine whether it is for a particular application of an abstract idea, natural phenomenon, or law of nature, rather than for the abstract idea, natural phenomenon, or law of nature itself (emphasis added).

Even assuming that the claimed invention could be said include abstract elements, although Applicant disputes that notion, the Examiner has not established that each of the claims, as a whole, fails to provide a particular application of those elements. Indeed, as discussed above, Applicant's claims and specification provide particular, real-world applications of the claimed invention, such as simulating a system and allowing, for example, system analysis, prediction and output thereof. In addition, as discussed above, claims 1-60 include recitations that are non-abstract and tangible.

Independent claims 1, 23, 43-45, 49, 53-55, 58 and 59 are drawn to subject matter that provides useful, concrete, and tangible results, and are therefore not abstract, but rather, statutory under 35 U.S.C. § 101. Likewise, dependent claims 2-22, 24-42, 46-48, 50-52, 56-57 and 60 are implicitly drawn to subject matter that provides useful, concrete, and tangible results and are therefore statutory as well. Accordingly, Applicant requests withdrawal of the rejection of claims 1-60 under 35 U.S.C. § 101.

### Section 102(b) Rejection

Applicant traverses the § 102(b) rejection of claims 1, 2, 4-24, 26-44 and 55-60. *Feehery* fails to anticipate the claims as amended. In order to properly anticipate the claimed invention under 35 U.S.C. § 102, a single prior art reference must disclose each and every element of the claim at issue, either expressly or under principles of inherency. Further, “[t]he identical invention must be shown in as complete detail as is contained in the . . . claim.” See M.P.E.P. § 2131. Also, “[t]he elements must be arranged as required by the claim.” *Id.*

Independent claims 1, 23, 43-45, 49, 55, 58 and 59 recite, *inter alia*, a method of simulating systems, wherein eliminating an integral includes “assigning a preferred integration location rank to one or more integrals.” As admitted in the Office Action in response to the remarks filed on March 2, 2006, *Feehery* fails to disclose or suggest “assigning a preferred integration location rank to one or more integrals.” Office Action at 24. Moreover, *Objects in C++* fails to remedy the deficiencies in *Feehery*. Accordingly, independent claims 1, 23, 43-45, 49, 55, 58 and 59 are therefore allowable over the prior art cited against the claims. Additionally, claims 2-22, 24-42, 46-48, 50-52, 56, 57, and 60 depend directly or indirectly therefrom, and are therefore allowable for at least the same reasons. Applicant therefore respectfully requests withdrawal of the § 102(b) rejection and the timely allowance of claims 1-52 and 55-60.

Independent claims 53 and 54 recite, *inter alia*, a method of simulating systems including “determining the solvability of the nonlinear equations.” As admitted in the Office Action in response to the remarks filed on March 2, 2006, *Feehery* fails to disclose or suggest “determining the solvability of the nonlinear equations.” Office Action at 24. Moreover, *Objects in C++* fails to remedy the deficiencies in *Feehery*. Accordingly claims 53 and 54 are

allowable over the prior art cited against the claims. Applicant therefore respectfully requests the withdrawal of the § 102(b) rejection and the timely allowance of claims 53 and 54:

### **Section 103(a) Rejection**

Applicant traverses the § 103(a) rejection of claims 3 and 25 because a case for *prima facie* obviousness has not been established. As M.P.E.P. § 2142 states, “[t]he examiner bears the initial burden of factually supporting any *prima facie* conclusion of obviousness.” To establish *prima facie* obviousness under 35 U.S.C. § 103(a), the applied references, taken alone or in combination, must, *inter alia*, teach or suggest each and every element recited in the claims. See M.P.E.P. § 2143.03 (8th ed. 2001).

Claims 3 and 25 depend upon claims 1 and 23, respectively. For at least the reasons presented above, *Feehery* does not teach or suggest each and every element recited in claims 1 and 23. In particular, *Feehery* does not teach or suggest at least “assigning a preferred integration location rank to one or more integrals,” as admitted in the Office Action at page 24. Therefore, each and every element recited in dependent claims 3 and 25, respectively, which implicitly require all of the features of base claims 1 and 23, is not disclosed or suggested.

Moreover, *Objects in C++* does not cure *Feehery*’s deficiencies. *Objects in C++* describes associating objects in the C++ programming language. The reference does not teach or suggest at least “assigning a preferred integration location rank to one or more integrals,” as recited in claims 1 and 23 and required by dependent claims 3 and 25. Accordingly, the applied references, taken alone or in combination, do not teach or suggest each and every element recited in claims 3 and 25. As such, a *prima facie* case of obviousness has not been established with respect to those claims.

Because *prima facie* obviousness has not been established, the § 103(a) rejection of claims 3 and 25 should be withdrawn. Applicant therefore requests withdrawal of the § 103(a) rejection and the timely allowance of these pending claims.

**Conclusion**

Applicant respectfully requests that this Amendment under 37 C.F.R. § 1.116 be entered by the Examiner, placing claims 1-60 in condition for allowance. Applicants submit that the proposed amendments do not raise new issues or necessitate the undertaking of any additional search of the art by the Examiner, since all of the elements and their relationships claimed were either earlier claimed or inherent in the claims as examined. Therefore, this Amendment should allow for immediate action by the Examiner.

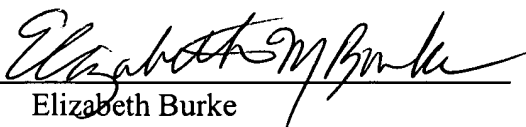
Finally, Applicant submits that the entry of the amendment would place the application in better form for appeal, should the Examiner dispute the patentability of the pending claims. Applicant requests the reconsideration of this application in view of the foregoing and the timely allowance of pending claims 1-60.

Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 06-0916.

Respectfully submitted,

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